



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,680	02/04/2005	Nigel B Aldridge	540-554	4208

23117 7590 09/07/2006

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

CONNELLY CUSHWA, MICHELLE R

ART UNIT PAPER NUMBER

2874

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/523,680

Applicant(s)

ALDRIDGE ET AL.

Examiner

Michelle R. Connelly-Cushwa

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,7-14,16-25 and 27-45 is/are rejected.
- 7) ☒ Claim(s) 4,6,15 and 26 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>02/04/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The prior art documents submitted by applicant in the Information Disclosure Statement filed on February 4, 2005 have all been considered and made of record (note the attached copy of form PTO-1449).

Drawings

Seven (7) sheets of formal drawings were filed on February 4, 2005 and have been accepted by the Examiner.

Specification

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 7-10, 12-14, 16-25 and 27-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson et al. (US 2002/0172470 A1).

Regarding claims 1-3, 5, 7-10, 12-14, 16-18, 23-25, 27-29, 34 and 38; Johnson et al. discloses a method and a substrate for providing a connection between an embedded fiber optic (16) and a surface connector (see Figures 1-3), the method comprising:

- providing a substrate (11) comprising an embedded fiber connector component (14);
- providing an embedded fiber optic (16) optically connected to the embedded fiber connector component (14)
- forming a trench (external connector ferrule, 15, is inserted into the trench) from the surface of the substrate to the embedded fiber connector to expose the embedded fiber connector component and to guide a fiber optic (17) towards the embedded fiber connector component;
- forming a fiber abutment connection between the embedded fiber connector component (14) and a fiber optic (17), wherein the fiber optic is for guiding radiation between the embedded fiber connector component and a surface connector;
- providing a plurality of embedded fiber connector components (see paragraph [0033]);
- locating an embedded element (sheath, 12, or alignment sleeve, 13) to identify the position of the embedded fiber connector

- component (the sheath and alignment sleeve identifies and positions the fiber connector component, 14); and
- providing a guide (alignment sleeve , 13) for aligning the fiber optic core with a fiber core of the embedded fiber optic;
 - wherein the trench has a linear profile;
 - wherein exposing the embedded fiber connector (14) comprises removing a filler material (resin dam, 18, which forms a plug) from proximal to at least a portion of the embedded fiber connector component (see Figure 2; the filler material is removed by cutting a portion of the substrate, 11, away at cut-line, 19; and see paragraph [0029]);
 - wherein forming the fiber abutment connection comprises self-aligning fiber optic and embedded fiber optic cores; and
 - wherein the fiber abutment connection is sealed within the substrate, by the external connector ferrule, 15 and the alignment sleeve, 13.

Regarding claims 19-22 and 30-33; Johnson et al. discloses:

- providing one or more composite material layers to form the substrate (11; see paragraph [0019]);
- wherein each composite material layer may comprise respectively aligned material fibers (see paragraphs [0019]-[0020]);

- wherein the material fibers may be glass (see paragraph [0020]);
and
- wherein the embedded fiber connector component (14) may be potted into a recess in a substrate support layer with resin (see paragraph [0020]).

Regarding claims 35-37; see paragraphs [0002]-[0008]. Johnson et al. discloses that the embedded fiber optic sensors are used in composite structures employed in automotive and aviation applications to measure a wide array of structural and environmental conditions includes strain, temperature, pressure, acceleration, acoustic emission, moisture content, etc.

Claims 39 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Aldridge et al. (US 2002/0150332 A1).

Regarding claim 39; Aldridge discloses a machine system (an Excimer laser together with focusing optics; see paragraph [0059]).

It is noted that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ2d 1647 (1987). As set forth in the preamble of this claim, Applicant is claiming a machine system, therefore, the machine system must possess clearly defined structural differences that set it apart from prior art machine systems.

Regarding claim 40; the laser is an Excimer laser that is controlled (see paragraphs [0059]-[0060]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11, 39, 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. (US 2002/0172470 A1).

Regarding claim 11; Johnson et al. does not explicitly state that index matching between the fiber optic and the embedded fiber optic is provided, however, one of ordinary skill in the art would have found it obvious to provide index matching between the fiber optic and the embedded fiber optic to ensure minimal coupling losses between the two fibers, as this is well within the level of ordinary skill in the art.

Regarding claim 39 and 41; Johnson et al. teaches that the embedded fiber connector (14; see Figure 2) is exposed by cutting away a portion of the substrate (11) at a cut-line (19). Johnson et al. does not disclose a particular machine system operable to expose the embedded fiber connector, however, one of ordinary skill in the art would have found it obvious to use any cutting machine system, since Johnson et al. teaches that the substrate is cut to expose the embedded fiber connector, since cutting machine systems are well known and commonly employed in the art, and since it appears that the invention would perform equally well regardless of the particular machine system used to expose the embedded fiber connector. Furthermore, cutting machine systems that use computer controls to ensure precise cuts are well known in

the art, and it would have been obvious to one of ordinary skill in the art to use one to cut the substrate (11) at the cut-line (19), as taught by Johnson et al.

Regarding claim 42; the trench has at least one predetermined profile in the invention of Johnson et al.

Claims 41-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aldridge et al. (US 2002/0150332 A1).

Regarding claim 41; Aldridge et al. discloses that "the laser can be set to remove a predetermined thickness of the material corresponding to the protective coating" in paragraph [0060]. However, Aldridge et al. does not explicitly state that the machine system is operable under computer control. One of ordinary skill in the art would have found it obvious to use a laser machining system that is operable under computer control to control the intensity and shape of the beam so as to control the depth, width and length that is cut into a material through the laser ablation, since such methods and laser machine systems are known and used in the art for processing various elements.

Regarding claim 42; the laser machine system disclosed by Aldridge et al. is operable automatically to expose a trench of at least one predetermined profile.

Regarding claim 43; Aldridge et al. teaches that a depth and position of an embedded fiber connector component are identified, that a suitable predetermined trench profile is identified for the identified depth; and that a trench is created corresponding to the suitable predetermined trench profile in order to expose an embedded fiber connector component.

Regarding claims 44 and 45; one of ordinary skill in the art would have found it obvious to for a program product comprising a carrier medium (a computer disk, a CD, a DVD, etc.) to store program instruction code comprising instructions for configuring at least one data processing apparatus (computer) to provide the machine system, since laser machine systems commonly operate via computer control to ensure precise and efficient machining, and carrier mediums that carry instruction code are well known and commonly used for providing programs to computers.

Allowable Subject Matter

Claims 4, 6, 15 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art cited on attached form PTO-892 is the most relevant prior art known, however, the invention of claims 4, 6, 15 and 26 distinguishes over the prior art of record because none of the references either alone or in combination disclose or render obvious:

- a method as defined in claims 4 or 15, or a substrate as defined in claim 26, the method comprising endowing the embedded element with one or more properties that can be used to identify the depth at which the embedded element is embedded in the substrate in combination with the limitations of the base and intervening claims; or

- a method as defined in claim 6, wherein the trench is formed by operating a CO laser and/or Excimer laser operated under machine control in combination with the limitations of the base and intervening claims.

Hence, there is no reason or motivation for one of ordinary skill in the art to use the prior art of record to make the invention of claims 4, 6, 15 and 26.

Conclusion

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.

Michelle R. Connelly-Cushwa
Michelle R. Connelly-Cushwa
Patent Examiner
8/31/06